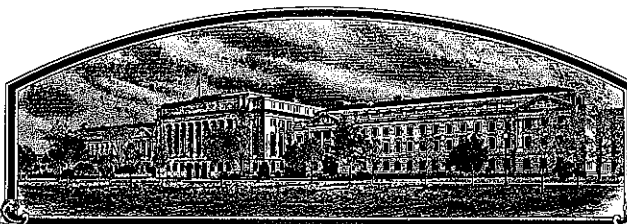


No.

9700399



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS, SHALL COME:

Western Plant Breeders

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW. NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Morgan'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of January, in the year of our Lord two thousand.

Attest:

Ann Marie L...

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Don Dickinson

Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Western Plant Breeders, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER S89-142		3. VARIETY NAME Morgan	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 8111 Timberline Drive Bozeman, MT 59718		5. TELEPHONE (include area code) (406) 587-1218		FOR OFFICIAL USE ONLY PVPO NUMBER 9700399 FILING DATE 9-12-1997 FILING AND EXAMINATION FEE: \$ 2450. ⁰⁰ DATE 9-12-1997 CERTIFICATION FEE: \$ 300. ⁰⁰ DATE Nov. 2, 1999	
		8. FAX (include area code) (406) 586-8247			
7. GENUS AND SPECIES NAME Triticum aestivum		8. FAMILY NAME (Botanical) Poaceae			
9. CROP KIND NAME (Common name) Common wheat					
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name) Corporation					
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Arizona		12. DATE OF INCORPORATION August 24, 1990			
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. Dale Clark Western Plant Breeders, Inc. 8111 Timberline Drive Bozeman, MT 59718				14. TELEPHONE (include area code) (406) 587-1218	
				15. FAX (include area code) (406) 586-8247	
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)					
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)					
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes," answer items 18 and 19 below) <input checked="" type="checkbox"/> NO (If "no," go to item 20)					
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO			19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED		
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES (If "yes," give names of countries and dates) U.S.A. September 1997 <input type="checkbox"/> NO					
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF APPLICANT (Owner(s)) Dale R. Clark for Western Plant Breeders NAME (Please print or type) Dale R. Clark			SIGNATURE OF APPLICANT (Owner(s)) Dan R. Biggenstaff NAME (Please print or type) Dan R. Biggenstaff		
CAPACITY OR TITLE Wheat and Barley Breeder		DATE Sept. 11, 1997		CAPACITY OR TITLE General Manager	
				DATE 9-11-97	

MORGAN

16.a. Exhibit A. Origin and Breeding History

Morgan (exp. # S89-142) is a hard red winter wheat selected from the cross Archer (= Sonora 64 / Trapper // Warrior / 3 / Centurk) x Norstar made in 1981 by Dr. Brian Fowler from the Crop Development Centre at the University of Saskatchewan. The F1 and F2 generations were grown in the greenhouse. Subsequent generations were grown in the field where selection was based on winter hardiness, plant height, straw strength, plant type, disease reaction and yield. Grain quality was evaluated in the F6, F7, F8 and F9 generations. Final selection was made in the F10 generation in 1989 and the line was designated S89-142. Yield and quality evaluations were continued in the F10 through F12 generation in regional and cooperative trials.

Heads were selected the summer of 1992 and planted as head rows in September of 1992. Selected head rows were harvested in August of 1993 and planted as line rows in September 1993. Uniform line rows were harvested in August, 1994 and bulked and planted in September, 1994 to produce breeders seed. Breeders seed was harvested in August 1995.

This Breeders seed was sent to Western Plant Breeders and was planted in September, 1995. Foundation seed was harvested in August, 1996 and given the name "Morgan". This seed was planted in September, 1996 to produce Registered and Certified seed. Certified seed was harvested in August, 1997 and will be available to growers for the first time in September, 1997.

A variant that is similar to Morgan but is 4 to 8 inches taller occurs at a frequency of up to .08% (8 per 10,000 plants). Otherwise, Morgan is a stable and uniform variety in agronomic appearance and performance across generations (F9 through F12) and growing conditions. Agronomic data to support this stability are presented in Tables 1 through 10.

16.b. Exhibit B. Statement of Distinctness

Morgan is most similar to the variety CDC Kestrel. **However, CDC Kestrel has a trace of anthocyanin in the coleoptile where Morgan has none. The flag leaf of CDC Kestrel is twisted while the flag leaf of Morgan is not twisted. The head shape of CDC Kestrel is strap shaped while that of Morgan tends to be more tapering. The glume shoulder of CDC Kestrel is wanting while those of Morgan are oblique. Also, the seed of CDC Kestrel is ovate where that of Morgan is oval and the brush on CDC Kestrel is long where as on Morgan, the brush is medium in length.**

Also, Morgan is 5 centimeters shorter ($t = -5.13$ with 16 d.f., $p < .001$, see Table 11), and most importantly, Morgan is approximately .9 percentage points higher in protein than Kestrel ($t = 6.013$ with 15 d.f., $p < .001$, see Table 12).

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK AND SEED DIVISION
BELTSVILLE, MARYLAND 20705
OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (TRITICUM SPP.)

EXHIBIT C
(Wheat)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) Western Plant Breeders, Inc. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) 8111 Timberline Drive Bozeman, MT 59718	FOR OFFICIAL USE ONLY
	PVPO NUMBER
	VARIETY NAME OR TEMPORARY DESIGNATION Morgan

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. or) when number is either 99 or less or 9 or less.

1. KIND:

<input type="text" value="1"/> 1 = COMMON	<input type="text" value="2"/> 2 = DURUM	<input type="text" value="3"/> 3 = EMMER	<input type="text" value="4"/> 4 = SPELT	<input type="text" value="5"/> 5 = POLISH	<input type="text" value="6"/> 6 = POULARD	<input type="text" value="7"/> 7 = CLUB
---	--	--	--	---	--	---

2. TYPE:

<input type="text" value="2"/> 1 = SPRING	<input type="text" value="2"/> 2 = WINTER	<input type="text" value="3"/> 3 = OTHER (Specify) _____	<input type="text" value="2"/> 1 = SOFT	<input type="text" value="3"/> 3 = OTHER (Specify) _____
<input type="text" value="2"/> 1 = WHITE	<input type="text" value="2"/> 2 = RED	<input type="text" value="3"/> 3 = OTHER (Specify) _____	<input type="text" value="2"/> 2 = HARD	

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

<input type="text" value="2"/> <input type="text" value="4"/> <input type="text" value="3"/> FIRST FLOWERING	<input type="text" value="2"/> <input type="text" value="4"/> <input type="text" value="8"/> LAST FLOWERING
--	---

4. MATURITY (50% Flowering):

<input type="text" value="0"/> <input type="text" value="3"/> NO. OF DAYS EARLIER THAN	<input type="text" value="8"/> 1 = ARTHUR	<input type="text" value="2"/> 2 = SCOUT	<input type="text" value="3"/> 3 = CHRIS	<input type="text" value="7"/> 7 = Rocky
<input type="text" value="0"/> <input type="text" value="2"/> NO. OF DAYS LATER THAN	<input type="text" value="7"/> 4 = LEMHI	<input type="text" value="5"/> 5 = NUGAINES	<input type="text" value="6"/> 6 = LEEDS	<input type="text" value="8"/> 8 = Norstar

5. PLANT HEIGHT (From soil level to top of head):

<input type="text" value="0"/> <input type="text" value="8"/> <input type="text" value="8"/> CM. HIGH				
<input type="text" value="0"/> <input type="text" value="7"/> CM. TALLER THAN	<input type="text" value="7"/>			
<input type="text" value="1"/> <input type="text" value="5"/> CM. SHORTER THAN	<input type="text" value="8"/> 1 = ARTHUR	<input type="text" value="2"/> 2 = SCOUT	<input type="text" value="3"/> 3 = CHRIS	<input type="text" value="7"/> 7 = Rocky
	<input type="text" value="4"/> 4 = LEMHI	<input type="text" value="5"/> 5 = NUGAINES	<input type="text" value="6"/> 6 = LEEDS	<input type="text" value="8"/> 8 = Norstar

6. PLANT COLOR AT BOOTING (See reverse):

<input type="text" value="2"/> 1 = YELLOW GREEN	<input type="text" value="2"/> 2 = GREEN	<input type="text" value="3"/> 3 = BLUE GREEN
---	--	---

7. ANTHUR COLOR:

<input type="text" value="1"/> 1 = YELLOW	<input type="text" value="2"/> 2 = PURPLE
---	---

8. STEM:

<input type="text" value="1"/> Anthocyanin: 1 = ABSENT	<input type="text" value="2"/> 2 = PRESENT	<input type="text" value="2"/> Waxy bloom: 1 = ABSENT	<input type="text" value="2"/> 2 = PRESENT
<input type="text" value="2"/> Hairiness of last internode of rachis: 1 = ABSENT	<input type="text" value="2"/> 2 = PRESENT	<input type="text" value="1"/> Internodes: 1 = HOLLOW	<input type="text" value="2"/> 2 = SOLID
<input type="text" value="0"/> <input type="text" value="3"/> NO. OF NODES (Originating from node above ground)		<input type="text" value="2"/> <input type="text" value="5"/> CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW	

9. AURICLES:

<input type="text" value="1"/> Anthocyanin: 1 = ABSENT	<input type="text" value="2"/> 2 = PRESENT	<input type="text" value="1"/> Hairiness: 1 = ABSENT	<input type="text" value="2"/> 2 = PRESENT
--	--	--	--

10. LEAF:

<input type="text" value="2"/> Flag leaf at booting stage: 1 = ERECT	<input type="text" value="2"/> 2 = RECURVED	<input type="text" value="1"/> Flag leaf: 1 = NOT TWISTED	<input type="text" value="2"/> 2 = TWISTED
<input type="text" value="1"/> Hairs of first leaf sheath: 1 = ABSENT	<input type="text" value="2"/> 2 = PRESENT	<input type="text" value="2"/> Waxy bloom of flag leaf sheath: 1 = ABSENT	<input type="text" value="2"/> 2 = PRESENT
<input type="text" value="1"/> <input type="text" value="4"/> MM. LEAF WIDTH (First leaf below flag leaf)		<input type="text" value="1"/> <input type="text" value="8"/> CM. LEAF LENGTH (First leaf below flag leaf)	

11. HEAD:

Density: 1 = LAX 2 = DENSE
 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE
 4 = OTHER (Specify) _____

Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED
 5 = BROWN 6 = BLACK 7 = OTHER (Specify) _____

CM. LENGTH
 MM. WIDTH

12. GLUMES AT MATURITY:

Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)
 3 = LONG (CA. 9 mm.)
 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)
 3 = WIDE (CA. 4 mm.)

Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED
 4 = SQUARE 5 = ELEVATED 6 = APICULATE
 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL
 Check: 1 = ROUNDED 2 = ANGULAR

Brush: 1 = SHORT 2 = MEDIUM 3 = LONG
 Brush: 1 = NOT COLLARED 2 = COLLARED

Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN
 4 = BROWN 5 = BLACK

Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

MM. LENGTH
 MM. WIDTH
 GM. PER 1000 SEEDS

17. SEED CREASE:

Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'
 2 = 80% OR LESS OF KERNEL 'CHRIS'
 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'
 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'
 2 = 35% OR LESS OF KERNEL 'CHRIS'
 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

STEM RUST (Races)
 LEAF RUST (Races)
 STRIPE RUST (Races)
 LOOSE SMUT

POWDERY MILDEW
 BUNT
 OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

SAWFLY
 APHID (Bydv.)
 GREEN BUG
 CEREAL LEAF BEETLE

OTHER (Specify) _____
 HESSIAN FLY RACES:
 GP
 A
 B
 C

D
 E
 F
 G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Kestrel	Seed size	Kestrel
Leaf size	Kestrel	Seed shape	Kestrel
Leaf color	Kestrel	Coleoptile elongation	Kestrel
Leaf carriage	Kestrel	Seedling pigmentation	Kestrel

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

MORGAN**Table 1.** Grain yields in kg/ha of Morgan compared to check varieties in the Canadian Central and Western Hard Red Winter Cooperative Trials for 1992, 1993 and 1994.

<u>LOCATION</u>	<u>MORGAN</u>	<u>KESTREL</u>	<u>NORSTAR</u>
<u>Central Coop</u>			
Alberta (5)	6339	6688	5373
Saskatchewan (22)	4928	4725	4033
Manitoba (4)	<u>4646</u>	<u>4516</u>	<u>3858</u>
mean (31)	5119	5015	4226
 <u>Western Coop</u>			
Alberta (7)	5349	5213	4721
Saskatchewan (2)	5025	4570	4410
Manitoba (2)	<u>4430</u>	<u>4600</u>	<u>4660</u>
mean (11)	5123	4985	4654
 Grand mean (42)	5120	5007	4338

() = # of locations

Table 2. Grain yield in kg/ha of Morgan compared to check varieties in the 1995 Canadian Hard Red Winter Wheat Cooperative Trials.

<u>LOCATION</u>	<u>MORGAN</u>	<u>KESTREL</u>	<u>NORSTAR</u>
Elrose, SK	2099	1960	2178
Melfort, SK	2338	3126	3113
Saskatoon 1, SK	2081	2327	2678
Saskatoon 2, SK	5675	5724	5262
Saskatoon Irr., SK	6202	6324	4597
Indian Head, SK	3224	3739	3468
Clair, SK	5364	4341	4371
Yorkton, SK	4938	5269	4588
Winnipeg, MB	5298	5985	4867
Lethbridge, AB	4933	4967	4402
Lacombe, AB	<u>6668</u>	<u>6825</u>	<u>6875</u>
 mean	4438	4599	4218

MORGAN

Table 3. Grain yield in bu/ac of Morgan compared to check varieties in the 1996 Montana Intrastate Winter Wheat Test.

<u>LOCATION</u>	<u>MORGAN</u>	<u>KESTREL</u>	<u>NORSTAR</u>	<u>TIBER</u>	<u>REDWIN</u>	<u>NEELEY</u>	<u>ROCKY</u>
Bozeman	80.3	79.3	76.1	79.4	73.7	86.9	84.6
Havre	48.4	52.0	44.9	47.4	42.9	47.7	48.6
Sidney	45.0	45.6	44.6	27.2	37.6	23.5	25.5
Kalispell	93.0	99.6	78.1	88.1	80.8	106.8	106.0
Moccasin	39.9	41.9	39.1	41.3	40.0	35.6	46.4
Huntley	52.0	61.0	58.5	57.4	62.9	58.4	71.2
Conrad	<u>57.6</u>	<u>63.8</u>	<u>50.5</u>	<u>48.9</u>	<u>44.7</u>	<u>59.8</u>	<u>65.9</u>
mean	59.5	63.3	56.0	55.7	54.6	59.8	64.0

Table 4. Agronomic performance summary table for Morgan compared to check varieties in the 92, 93, and 94 Canadian Central Hard Red Winter Wheat Cooperative Trials, and 1994 Canadian Western Hard Red Winter Wheat Cooperative.

<u>Cultivar</u>	<u>CENTRAL</u>				<u>WESTERN</u>	
	Heading Date (<u>Julian</u>)	Maturity Date (<u>Julian</u>)	Height (<u>cm</u>)	Lodging (<u>0-9</u>)	Height (<u>cm</u>)	Lodging (<u>0-9</u>)
Morgan	172	219	90	1.2	91	2.9
Kestrel	173	220	95	1.9	97	2.9
Norstar	175	221	113	6.3	112	3.5
# of trials	(11)	(12)	(26)	(14)	(9)	(4)

MORGAN

Table 5. Plant height in cm. of Morgan compared to check varieties in the 1995 Canadian Central Hard Red Winter Wheat Cooperative Tests.

<u>LOCATION</u>	<u>MORGAN</u>	<u>KESTREL</u>	<u>NORSTAR</u>
Elrose, SK	58	62	72
Melfort, SK	55	55	65
Saskatoon 1, SK	53	57	68
Saskatoon 2, SK	83	88	102
Saskatoon Irr., SK	92	98	107
Indian Head, SK	85	86	107
Clair, SK	100	98	118
Yorkton, SK	93	95	113
Winnipeg, MB	88	96	104
Lethbridge, AB	96	100	120
Lacombe, AB	<u>80</u>	<u>85</u>	<u>95</u>
mean	80	84	97

Table 6. Plant height in cm. of Morgan compared to check varieties in the 1996 Montana Intrastate Winter Wheat Test.

<u>LOCATION</u>	<u>MORGAN</u>	<u>KESTREL</u>	<u>NORSTAR</u>	<u>TIBER</u>	<u>REDWIN</u>	<u>NEELEY</u>	<u>ROCKY</u>
Bozeman	91	100	108	100	96	93	93
Havre	60	71	76	68	66	66	63
Sidney	71	78	91	60	68	66	60
Kalispell	103	111	141	121	116	111	108
Moccasin	75	78	88	78	71	76	78
Conrad	<u>86</u>	<u>86</u>	<u>103</u>	<u>88</u>	<u>86</u>	<u>86</u>	<u>81</u>
mean	81	87	101	86	84	83	81

MORGAN

Table 7. End use quality of Morgan compared to check varieties in the 1992, 1993, and 1994 Canadian Central Hard Red Winter Wheat Cooperative Trials.

<u>ENTRY</u>	<u>T.W.</u> <u>kg/l.</u>	<u>Wheat</u> <u>Protein</u>	<u>Flour</u> <u>Protein</u>	<u>Flour</u> <u>Yield</u>	<u>Farinograph</u>			<u>Relative</u> <u>Loaf Volume</u>
					<u>Absorption</u>	<u>Mix</u> <u>Tolerance</u>	<u>Stability</u>	
Morgan	81.8	12.2	11.4	76.0	59.5	58	7.17	763
Kestrel	80.8	10.9	10.2	77.4	57.2	60	5.67	692
Norstar	81.9	11.8	11.3	77.0	57.1	57	6.83	753

Table 8. End use quality of Morgan compared to check varieties in the 1994 Canadian Western Hard Red Winter Wheat Cooperative Trials.

<u>ENTRY</u>	<u>T.W.</u> <u>kg/l.</u>	<u>Wheat</u> <u>Protein</u>	<u>Flour</u> <u>Protein</u>	<u>Flour</u> <u>Yield</u>	<u>Farinograph</u>			<u>Relative</u> <u>Loaf Volume</u>
					<u>Absorption</u>	<u>Mix</u> <u>Tolerance</u>	<u>Stability</u>	
Morgan	82.3	12.0	11.3	76.7	59.2	50	6.5	750
Kestrel	81.2	11.4	10.7	78.3	58.6	65	6.0	715
Norstar	82.8	12.4	11.7	78.8	58.1	60	7.5	775

MORGAN

Table 9. Grain protein (%) of Morgan compared to check varieties in the 1995 Canadian Central Hard Red Winter Cooperative Trials.

<u>LOCATION</u>	<u>MORGAN</u>	<u>KESTREL</u>	<u>NORSTAR</u>
Elrose, SK	15.6	14.5	15.2
Melfort, SK	14.0	11.9	12.7
Saskatoon 1, SK	16.3	15.2	15.1
Saskatoon 2, SK	11.6	11.1	11.8
Saskatoon Irr., SK	11.1	10.6	11.2
Indian Head, SK	10.8	10.2	10.8
Clair, SK	11.2	10.8	11.0
Yorkton, SK	12.2	11.8	12.0
Lacombe, AB	<u>12.6</u>	<u>10.9</u>	<u>11.9</u>
mean	12.8	11.9	12.4

Table 10. Grain protein (%) of Morgan compared to check varieties in the 1996 Montana Intrastate Winter Wheat Test.

<u>LOCATION</u>	<u>MORGAN</u>	<u>KESTREL</u>	<u>NORSTAR</u>	<u>TIBER</u>	<u>REDWIN</u>	<u>NEELEY</u>	<u>ROCKY</u>
Bozeman	14.2	14.0	15.1	15.1	15.8	14.6	14.5
Havre	12.6	11.8	12.7	13.2	13.5	12.8	12.3
Sidney	11.7	11.4	12.0	13.3	13.7	13.8	11.8
Kalispell	11.0	9.8	11.0	11.1	11.6	10.2	10.4
Moccasin	15.3	14.7	13.5	13.7	14.4	14.1	14.2
Conrad	14.5	12.6	14.4	14.2	15.3	13.9	14.2
Huntley	<u>14.5</u>	<u>12.6</u>	<u>14.4</u>	<u>14.2</u>	<u>15.3</u>	<u>13.9</u>	<u>14.3</u>
mean	13.4	12.6	13.4	13.7	14.2	13.5	13.1

Morgan

Table 12. Test of significance (Student's t on paired plots) comparing the protein concentration of Morgan and Kestrel in University trials.

(all values are the mean % protein of two replicated plots at each site)

<u>Protein Concentration in %</u>					
<u>Year</u>	<u>Location</u>	<u>Morgan</u>	<u>Kestrel</u>	<u>difference</u>	<u>diff sq</u>
1995	<u>Canadian Coop.</u>				
	Elrose, SK	15.6	14.5	1.1	1.21
	Melfort, SK	14.0	11.9	2.1	4.41
	Saskatoon 1, SK	16.3	15.2	1.1	1.21
	Saskatoon 2, SK	11.6	11.1	0.5	0.25
	Saskatoon Irr., SK	11.1	10.6	0.5	0.25
	Indian Head, SK	10.8	10.2	0.6	0.36
	Clair, SK	11.2	10.8	0.4	0.16
	Yorkton, SK	12.2	11.8	0.4	0.16
	Lacombe, AB	12.6	10.9	1.7	2.89
1996	<u>Montana St. Univ.</u>				
	Bozeman	14.2	14.0	0.2	0.04
	Havre	12.6	11.8	0.8	0.64
	Sidney	11.7	11.4	0.3	0.09
	Kalispell	11.0	9.8	1.2	1.44
	Moccasin	15.3	14.7	0.6	0.36
	Conrad	14.5	12.6	1.9	3.61
	Huntley	<u>14.5</u>	<u>12.6</u>	1.9	3.61
		12.2	11.3		
		sum =		15.3	20.69
		mean =		0.95625	1.293125
		sd2 =		$\frac{20.69 - 15.3^2}{16(15)}$	
		=		0.025	
		sd =		0.159	
		t =		$\frac{0.956}{0.159}$	
		=		6.013 with 15 degrees of freedom	
				p<.001	

Morgan

Table 11. Test of significance (Student's t on paired plots) comparing the plant heights of Morgan and Kestrel in University trials.

(all values are the mean height of two replicated plots at each site)

<u>Plant Height in centimeters</u>					
<u>Year</u>	<u>Location</u>	<u>Morgan</u>	<u>Kestrel</u>	<u>difference</u>	<u>diff sq</u>
1995	<u>Canadian Coop.</u>				
	Elrose, SK	58	62	-4	16
	Melfort, SK	55	55	0	0
	Saskatoon 1, SK	53	57	-4	16
	Saskatoon 2, SK	83	88	-5	25
	Saskatoon Irr., SK	92	98	-6	36
	Indian Head, SK	85	86	-1	1
	Clair, SK	100	98	2	4
	Yorkton, SK	93	95	-2	4
	Winnipeg, MB	88	96	-8	64
	Lethbridge, AB	96	100	-4	16
	Lacombe, AB	80	85	-5	25
1996	<u>Montana St. Univ.</u>				
	Bozeman	91	100	-9	81
	Havre	60	71	-11	121
	Sidney	71	78	-7	49
	Kalispell	103	111	-8	64
	Moccasin	75	78	-3	9
	Conrad	86	86	0	0

sum = -75 531

mean = -4.41176 31.23529

$$sd2 = \frac{531 - (-75)^2/17}{17(16)}$$

= 0.7389

sd = 0.8596

$$t = \frac{-4.4117}{0.8596}$$

= -5.1322 with 16 degrees of freedom

p<.001

MORGAN

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) Western Plant Breeders, Inc.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER S89-142	3. VARIETY NAME Morgan
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 8111 Timberline Drive Bozeman, MT 59718	5. TELEPHONE (include area code) (406) 587-1218	6. FAX (include area code) (406) 586-8247
7. PVPO NUMBER		

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain.

☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company?

☒ YES ☐ NO

If no, give name of country _____

10. Is the applicant the original breeder? If no, please answer the following:

☐ YES ☒ NO

a. If original rights to variety were owned by individual(s):

Is (are) the original breeder(s) a U.S. national(s)? If no, give name of country _____

☐ YES ☒ NO

b. If original rights to variety were owned by a company:

Is the original breeder(s) U.S. based company? If no, give name of country Canada

11. Additional explanation on ownership (If needed, use reverse for extra space):

Ownership has been granted to Western Plant Breeders, Inc. by the University of Saskatchewan - see attached document.

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original breeder, both the original breeder and the applicant must meet one of the above criteria.

The original breeder may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

Public reporting burden for this collection of information is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Jamie L. Whitten Building, Washington, D.C. 20250. When replying, refer to OMB No. 0581-0055 and form number in your letter.

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September 8, 1997

TO WHOM IT MAY CONCERN

The variety Morgan hard red winter wheat for which Plant Variety Protection is sought was developed by the University of Saskatchewan's Crop Development Centre. By agreement between the University of Saskatchewan and Western Plant Breeders, Inc., 8111 Timberline Drive, Bozeman, Montana, 59718 U.S.A., Western Plant Breeders, Inc. has been given all rights of ownership for Plant Variety Protection in the United States of America.

Sincerely,

Handwritten signature of G.G. Rowland.

G.G. Rowland
Director

GGR/sfs

Handwritten signature of the Notary Public.

NOTARY PUBLIC
MY APPOINTMENT EXPIRES
JAN. 31, 2002